Intervals, Transformations, and Slope Solution (version 50)

1. The function f is graphed below.
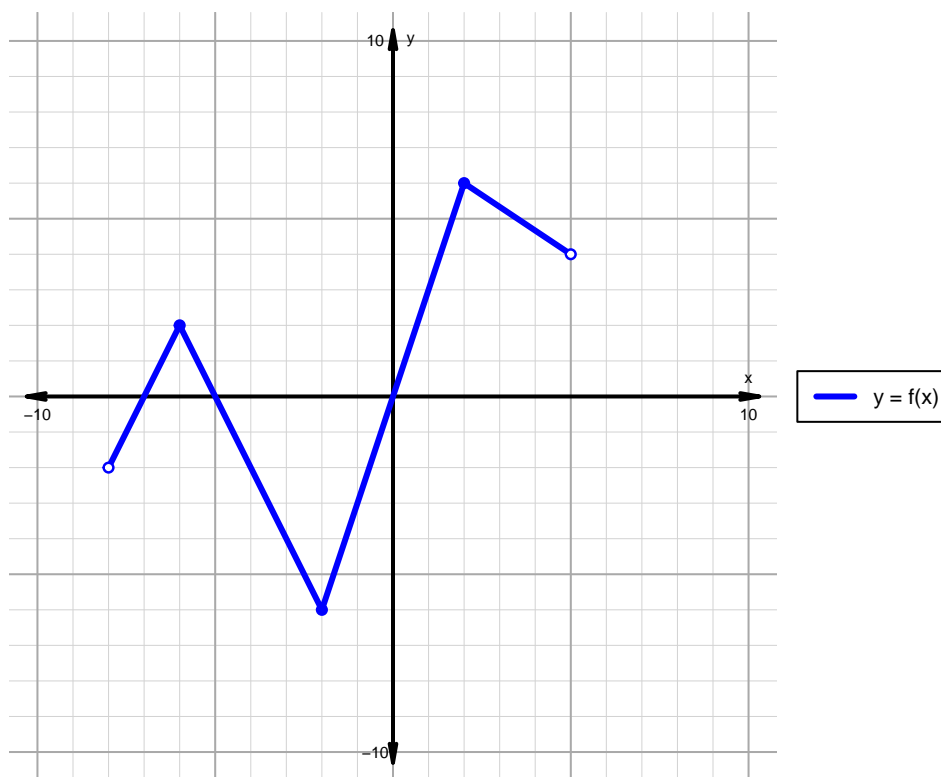
Indicate the following intervals using interval notation. Remember, you can use $\cup$ between two intervals to indicate the union. Except for range, all intervals will indicate x values; this is standard.

Feature	Where
Positive	$(-7, -5) \cup (0, 5)$
Negative	$(-8, -7) \cup (-5, 0)$
Increasing	$(-8, -6) \cup (-2, 2)$
Decreasing	$(-6, -2) \cup (2, 5)$
Domain	$(-8, 5)$
Range	$(-6, 6)$

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2. In the four graphs below, $y = f(x)$ is graphed as a dotted line. Please add the indicated transformed graphs indicated by the equations below using a solid line.

$$y = f(x - 2)$$

$$y = 2 \cdot f(x)$$

$$y = f(2 \cdot x)$$

$$y = f(x) - 2$$
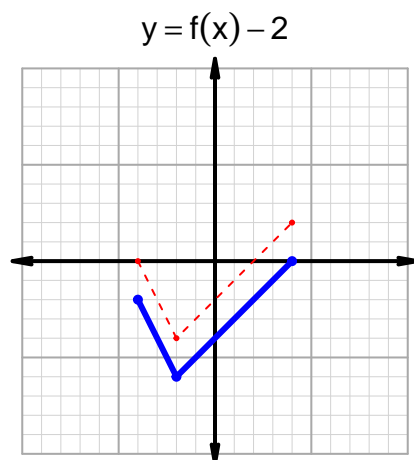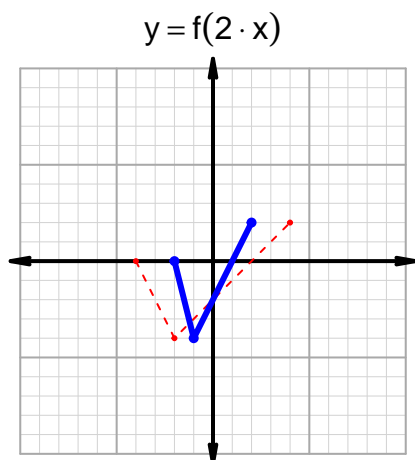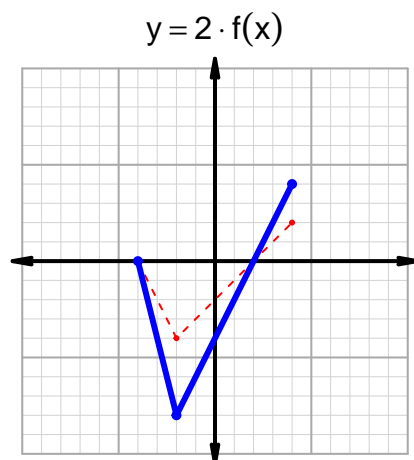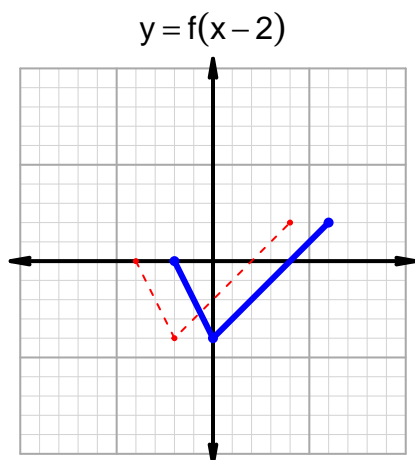
3. Let function g be defined by the table below. Use the formula $\frac{g(x_2) - g(x_1)}{x_2 - x_1}$ to find the average rate of change between $x_1 = 64$ and $x_2 = 85$. Express your answer as a reduced fraction.

x	$g(x)$
8	64
23	85
64	23
85	8

$\frac{f(85) - f(64)}{85 - 64} = \frac{8 - 23}{85 - 64} = \frac{-15}{21}$

The greatest common factor of -15 and 21 is 3. Divide numerator and denominator by the greatest common factor.

$$\text{AROC} = \frac{-5}{7}$$